maintains the blood in the condition most favourable to the formation of the other." Lastly, he suggests that in this theory may be found the meaning of the commensurate development of many other organs which in their function appear unconnected; such are the thymus gland and the air breathing organs, the thyroid gland and the brain, the spleen and pancreas, and the embryo and mammary gland of the parent.—*Ranking's Abstract*, vol. vi., from *Paget's Lectures, delivered at Royal Coll. Surg.*, 1847.

4. *Contractility of Arteries.*—E. and E. H. WEBER have succeeded in proving, by galvanic agency, the muscular nature of arteries whose calibre is small, but they obtained no satisfactory evidence, from their experiments, of contraction in larger ones. They have employed the rotating electro galvanic apparatus, and have subjected the vessels of the mesentery of frogs to its influence. Arteries of the chosen size, i. e. 1-7th to 1-17th of a line diameter, so acted upon, did not on the instant answer to the irritation, but soon after contracted to a third of their previous diameter; if the irritation were continued, the artery progressively diminished, until the stream of blood-corpuscles was but a single row, or even became interrupted. This narrowing was limited in extent by the range of electric irritation, and produced on the stream of blood a marked acceleration, according to the law of hydraulics observed in diminished tubes. The contraction is only temporary, and the arteries recover completely their normal size and condition, being liable to renewed contraction on a fresh application of the electricity. Capillary vessels, 1-96th of a line in diameter, or thereabouts, exposed to electric stimulus, evinced no contractility, neither were they dilated, but coagulation of the blood was observed to take place. A weak electric stimulus produces, after an interval, a sensible retardation of the stream of blood, which seems to be due to the coherence of the blood-corpuscles, or adherence to the walls of the vessel, with the greater friction of their movement; and this retardation speedily ends in a total stop, whilst the newly-arriving blood-corpuscles accumulate, and fill up the vessel until collateral passages relieve the pressure. After a time the blood-corpuscles disperse once again, and the circulation is restored. A similar retardation and impeding of the circulation are occasioned in minute veins by electric agency, but in these it does not take place with the same facility as in the arterial capillaries, apparently because the stream is less rapid.—*Ranking's Abstract*, vol. vi., from *Müller's Archives*, 1847, No. 2.

5. *On the Nucleus of the Animal and Vegetable Cell.*—By Dr. MARTIN BARRY—Schleiden ascribed to the nucleus of the vegetable elementary cell the power of forming around it a membrane which became the cell-membrane or cell-wall; hence he gave to the nucleus the name of cytoblast. But with the formation of the cell-wall he conceived the function of the nucleus to cease; and thought that, being no longer required, it became inert in the cell-wall, or in some instances was absorbed. The nucleus itself was, in the first instance, produced by a similar mode of development, being deposited around a smaller body, which sometimes remained as a permanent nucleolus. The same view of the formation of cells was advocated in relation to the animal tissues by Schwann, Muller, Henle, and Valentin, the last of whom thus describes the process:—" In a fluid there are precipitated granules, which are nucleoli; around the nucleolus there is deposited a finely granular substance, by which there is formed the nucleus (cytoblast); and around the nucleus there is formed the membrane of the cell. The principle of formation of the nucleus around the nucleolus, is essentially the same as that of the cell around the nucleus."

To borrow the language of the botanist, the preceding physiologists consider the vegetable animal cell to have an "exogenous" development; the primitive nucleolus remaining *central*, and the subsequent formations being deposited layer by layer *around* the nucleolus, which, so long as it remains at all, retains the same relative position. This view Dr. Barry conceives to be incorrect, and propounds a theory of cell-development which corresponds much more closely with the type of structure called in botany "endogenous." Dr. Barry describes the development of the cell as being analogous to that of the mammiferous ovum. According to him the original granule or nucleolus gradually enlarges, and in time develops *within it* a second body, which, appearing at first as a pellucid point, comes to occupy the position and assume the form of the original nucleolus, which has now expanded into a nucleus (the cytoblast of Schleiden). Thus the primitive formation becomes peripheral, while the secondary nucleolus occupies the central position. The same law is pursued in the further development. The nucleus or cytoblast becomes a cell, and the secondary nucleolus becomes in its turn a nucleus by the development *within it* of a tertiary formation, which assumes the position and functions of the nucleolus. In the complete cell thus formed there are three parts—1st, the cell-membrane, or cell-wall of Schleiden, which is the original or *primary* nucleolus; 2d, the nucleus (cytoblast of Schleiden), which is the *secondary* nucleolus; 3d, the true nucleolus of Schleiden, which is the *tertiary* or last developed nucleolus of Dr. Barry.

According to this theory, therefore, cells are developed *endogenously*: the first formed parts being always found at the periphery, and the last or most recent at the centre. The central parts by renewed developments are expanded and pushed outwards; and thus the nucleolus becomes a cytoblast, and the cytoblast becomes a cell.

The development may, however, proceed according to the same law, beyond the stage which corresponds to the complete cell of Schleiden; its further stages becoming complicated by the subdivision of the nucleus. According to Dr. Barry, this body sends out processes into the surrounding substance, assuming in this way a stellated form. As development proceeds, each of these projecting portions of the nucleus becomes a separate centre, from which new cytoblasts are generated as already described; the central original nucleolus undergoing also a similar development. In this way the original cell may become a body of the utmost complexity of structure; the nuclei being subdivided into new centres or nucleoli, and these undergoing endogenous development into nuclei and cells.

The mode of fissiparous multiplication thus ascribed to the nucleus, was first seen by Dr. Barry in the germinal spot of the ovum, which he considers to be the type of all cell-development. He has, however, traced the same process in many elementary cell-formations, including blood-corpuscles, pus and mucus globules, and epithelium cells.

Dr. Barry gives to the pellucid point, which is the first stage of Schleiden's nucleolus, the name of hyaline. This hyaline is at first quite structureless, and even after it has enlarged considerably, presents no distinct membranous envelope. Before the formation of the secondary nucleolus, however, it becomes surrounded by a number of extremely minute granules, which appear to enter into the formation of its envelope. In like manner the secondary nucleolus is at first formed without a membrane, but afterwards acquires one by the coalescence of a layer of superimposed granules. The minute granules which thus enter into the formation of the cell-wall, are considered by Dr. Barry to arise from the hyaline, and to be themselves the result of an exceedingly minute process of cell-development. This structure he has described and figured in the ovisac.

It only remains to say that Dr. Barry conceives this mode of cell-formation to be universal; and that, in particular, he believes the blood-corpuscles to arise in the ovum, and at all subsequent periods in this manner. Furthermore, he refers to his former memoir (Philosophical Transactions, 1841), in which he stated, that all the tissues were formed from corpuscles, having the same appearance as the corpuscles of the blood, and which he believes to be actually blood-corpuscles which had been in the circulation. Into the proof of this theory, and the other illustrations which he gives of his views of cell-formation, we have not space to enter at present.—*Monthly Journ., and Retrospect of the Med. Sci.*, Feb. 1848, from *Edin. New Philos. Journ.*, Oct. 1847.

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6. *On the Functions of the Spleen, and Constitution of Venous Blood in different Animals.* By M. BECLARD.—It is, from many circumstances, probable that the spleen is an organ intended, in some way or other, to operate upon the blood which passes through it; and in order to ascertain whether any, or what changes, are produced by it, M Beclard has performed a series of analyses of venous blood, the results of which he has here detailed, and which lead to conclusions of a very remarkable character. His experiments entirely disprove the opinion of Donné, that the spleen